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(12) # EUROPEAN PATENT SPECIFICATION

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Description

This invention relates to a crate. More particularly, it relates to a bottle crate.

The applicant is aware of its own EPO publication 0162162 and USA design application 684464, which provided a thin-walled stackable crate with downwardly projecting formations to engage the necks of bottles in a subjacent crate.

The applicant is further aware of other thin-walled stackable crates such as that disclosed in the United States patent specification 4 244 530 (DE LAROSIERE), which rests on the tops of bottles in a subjacent crate.

The applicant is also aware of thick-walled crates such as that in Belgian patent 693216, which also rests on the necks of bottles in a subjacent crate.

Each of these crates has a height which is less than the height of the bottles and this provides significant advantages in utilisation of material. The applicants are also aware of British Patent No. GB 1297456. This document describes a crate having upwardly open sockets and shallow formations for resting on the tops of subjacent bottles. However, this crate does not have a smooth base suitable for use on a roller conveyor. However the applicant has now designed a further crate with this advantage and which can have good stacking ability when supported on bottles while providing for good bottle separation and satisfactory handling on conveyors and the like.

According to the invention there is provided a bottle crate (10) which includes: an upper part (10.1) which is upwardly open; a lower part (10.2) including a floor (12), the lower part (10.2) of the crate (10) being receivable in an upper part (10.1) of an identical subjacent crate (10); and separating means (14.1, 14.2) extending upwardly away from the floor (12) at least partially to define upwardly opening primary sockets in which at least lower portions of bottles are receivable; a smooth bottom surface provided by the floor (12) permitting smooth movement of the crate (10) on a roller conveyor; supporting means provided above the floor at a height less than that of the separating means (14.1, 14.2) to provide each primary socket with a seat (20) on which a lower portion of a bottle received in the primary socket is supportable; and downwardly opening secondary sockets (22) within which neck portions of bottles in a subjacent crate are receivable in use; characterised in that the secondary sockets (22) have respective socket mouths with respective peripheral surface means (23) for resting on the neck portions of bottles in an identical subjacent crate; and in that to enable the crate (10) to be stacked, when empty, receiving means (34) are defined by the lower parts of the separating means (14.1, 14.2) and, if necessary, recesses in the wall, so that the tops of the separating means (14.1, 14.2) of one crate (10) can fit into the receiving means of a higher identical crate (10) spigot-socket fashion.

The crate may include a peripheral wall extending upwardly from and surrounding the floor. In an elongated rectangular crate this peripheral wall will have two side portions, and two end portions. The side and end portions may be suitably shaped so that an upper part of each portion forms parts of the upper part of the crate and a lower part of each portion forms part of the lower part of the crate. For example, the portions may be stepped to facilitate at least partial location of the lower part of the crate within the upper part thereof. This can provide a stepped formation or rebate where the upper and lower parts of the wall meet. Thus, when a crate is stacked on top of a subjacent crate, the floor and lower part of the wall fits within the upper part of the subjacent crate and the upper part of the wall rests on the upper part of the wall of the subjacent crate.

The supporting means may comprise generally hollow support posts which open out at the bottom surface of the floor of the crate and may at least partly define the secondary sockets.

The separating means may comprise free-standing separating posts projecting from the floor in spaced relationship. These posts may be arranged in rows. The wall may be provided with further spaced separating posts aligned with the free-standing posts. Thus, for example, a crate adapted to carry twelve bottles, may have six free-standing separating posts and these and the posts on the walls may be in a rectangular grid of five by four rows. The primary sockets may lie between four adjacent separating posts or between adjacent posts and the peripheral wall, as the case may be.

The separating posts, or at least the lower parts thereof, may be generally hollow and/or formed by suitable wall formations. They may be of a height greater than the height of the wall. The support posts in turn may have a height less than the height of the wall.

Adjacent separating posts and support posts may be interconnected by means of webs extending between them. The height of the webs may be approximately the same as or slightly less than that of the support posts.

To enable the crate to be stacked, when empty, receiving means in the form of sockets may be defined by the lower parts of the hollow separating posts, so that the tops of the separating posts of one crate can fit into the sockets of a higher identical crate spigot-socket fashion. Also, recesses can be formed in the walls, where appropriate, to facilitate this stacking.

According to another embodiment of the invention, some or all of the separating means may be in the form of planar partitions which may co-operate with separating posts and/or the peripheral wall to define primary sockets of substantially square cross-section.

The wall may include reinforcing means to improve the rigidity of the wall, although reinforcing may be provided by the hollow separating posts which are integral with the wall, if provided.

The invention will now be described with reference to the accompanying diagrammatic drawings.

In the drawings,

Figure 1 shows a side view of a bottle crate according to one embodiment of the invention;

Figure 2 shows an end view of the crate of Figure 1;

Figure 3 shows a top plan view of the crate of Figure 1;

Figure 4 shows an underplan view of the crate of Figure 1;

Figure 5 shows a sectional side view of the crate of Figure 1 taken along lines V-V of Figure 3; and

Figure 6 shows a sectional end view of the crate of Figure 1 taken along the lines VI-VI in Figure 3.

Referring to Figures 1 to 6, a bottle crate in accordance with one embodiment of the invention is designated generally by the reference numeral 10. The crate 10 includes an upper part 10.1 and a lower part 10.2 including a floor 12. Separating means in the form of a plurality of separating posts 14 including free-standing posts 14.1 extending upwardly from the floor and posts 14.2 integral with a peripheral wall 24 of the crate, the posts being in spaced relationship in a rectangular grid pattern. These posts 14 at least partially define upwardly opening primary sockets (discussed in greater detail below) in which at least lower portions of bottles (not shown) are receivable. The peripheral wall 24 extends upwardly from and surrounds the floor 12.

The crate 10 further includes supporting means in the form of hollow support posts 18 projecting upwardly from the floor 12 to form a bottle-supporting seat for each primary socket. More specifically, support posts 18 has at its top a seat defined by an annular rib 20 on which a bottom of a bottle is supportable. The hollow support posts 18 extend from the floor 12 to a height less than that of the separating posts 14. The hollow support posts further define downwardly opening secondary sockets 22 (Figure 4) opening in the region surface of the floor 12 and within which neck portions of bottles in a subjacent crate are receivable in use. The mouth of each socket 22 has a bevelled edge 23 to define a shoulder which, in use, sits on the neck portion of the bottle. The shoulder 23 provides a more even force distribution over the neck portion of the bottle, and also serves to facilitate transporting bottles of slightly differing dimensions.

The free-standing separating posts 14.1 are at least partly hollow and are of a height exceeding the height of the wall 24. The separating posts 14 and the support posts 18 are interconnected by means of webs 26 extending diagonally between adjacent posts 14, 18. The height of the webs 26 is approximately the same as that of the support posts 18.

The separating posts 14.2 integral with the wall are formed partly by locating formations formed by the wall and partly by extensions 28. These posts 14.2 also extend upwardly from the floor 12 and project upwardly beyond the top of the wall. The formations in the wall provide outer rebates in the wall. The extensions 28 are each hollow and have a substantially semi-circular or D-shaped cross-section which tapers at its top. The hollow interiors of the extensions 28 provide sockets 30 aligned with the rebates and the rebates and sockets form receiving means with the rebates leading into sockets 30. In use the top parts of the posts of a subjacent crate can fit into the rebates and the sockets of the crate spigot-socket fashion when stacking empty crates.

The crate 10 includes gripping means 32 provided by recesses in the floor 12. The gripping means 32 serve as handles to enable the crate to be manoeuvred in use.

In use, the crate 10 is used for transporting bottles having elongated neck portions. In the example shown, the crate 10 is designed to carry twelve bottles. Hence, the crate has twelve primary sockets, into each of which a support post 18 projects. Four of these primary sockets are corner sockets each defined between a post 14.2 of a respective corner portion 25 of the wall 24, the two posts 14.2 on the wall and adjacent to the corner, and the adjacent free-standing separating post 14.1. Two further primary sockets are end sockets defined between the pairs of posts 14.2 at the ends of the crate and the opposed pairs of free-standing separating posts 14.1, and four further primary sockets are side sockets defined between the three posts 14.2 at each side of the crate and the opposed three free-standing posts 14.1 on each side of the crate, thus forming two side sockets on each side of the crate. A further two primary sockets are central sockets defined between the two rows of three free-standing posts 14.1. The bottles sit on the seats 20 of the support posts 18, and are held in position by means of the separating posts 14. The separating posts 14 also serve to prevent the bottles from coming into contact with each other.

One crate containing bottles is then stacked on top of another crate containing bottles so that those bottles in the subjacent crate have their neck portions received in the secondary sockets 22 of the upper crate. The upper crate is therefore supported on the bottles of the subjacent crate. The design of the sockets accordingly is such that undesirable tilting or rocking of the stacked crates is limited by engagement of the bottle necks with said sockets 22.

When empty crates are stacked, the separating posts 14 of a subjacent crate are received within openings 34 defined in the lower ends of the free-standing posts 14.1 of an upper crate and the tops of the posts 14.2 are received within the sockets 30 of the corresponding posts 14.2 of the upper crate.

In addition, the wall 24 has an upper part 24.1 in the upper part of the crate, and a lower part 24.2 in the lower part of the crate. The upper and lower wall parts meet at a stepped formation or rebate. Thus, when a crate is stacked on top of a subjacent crate, the lower part 10.2 of the crate fits within the upper part 10.1 of the subjacent crate, and the upper wall part 24.1 of the one crate rests on the upper part 24.1 of the subjacent crate. The top edge of the wall of the subjacent crate simultaneously abuts against the bottom edge of the wall of the top crate, in use.

Thus, the total height of the crate when stacked can be substantially less than the cumulative total height of the individual crates, (and can approximate the total height of the upper wall part 24.1). The

engagement between the posts and sockets of adjacent crates gives a stack of empty crates stability and reduces the height of the stack to the cumulative height of the walls, for reduced storage space.

Ribs 36 are provided on the wall 24 of the crate 10. These ribs 36 serve to limit relative movement between adjacent side-by-side abutting crates, for example when a plurality of crates are lifted together onto or from a pallet.

Earlier crates designed by the Applicants for a similar purpose have a relatively uneven bottom surface. Thus, when such crates are being transported on roller conveyors, for instance, the uneven bottom surface of the crates can cause bottles therein to be shaken. This is not always suitable for easy handling or when the crates are carrying glass bottles and/or when bottles in the crates are filled with gaseous liquids. It is accordingly an advantage of the crates 10 that they have relatively smooth bottom surfaces provided by their floors.

Claims

1. A bottle crate (10) which includes: an upper part (10.1) which is upwardly open; a lower part (10.2) including a floor (12), the lower part (10.2) of the crate (10) being receivable in an upper part (10.1) of an identical subjacent crate (10); and separating means (14.1, 14.2) extending upwardly away from the floor (12) at least partially to define upwardly opening primary sockets in which at least lower portions of bottles are receivable; a smooth bottom surface provided by the floor (12) permitting smooth movement of the crate (10) on a roller conveyor; supporting means provided above the floor at a height less than that of the separating means (14.1, 14.2) to provide each primary socket with a seat (20) on which a lower portion of a bottle received in the primary socket is supportable; and downwardly opening secondary sockets (22) within which neck portions of bottles in a subjacent crate are receivable in use; characterised in that the secondary sockets (22) have respective socket mouths with respective peripheral surface means (23) for resting on the neck portions of bottles in an identical subjacent crate; and in that to enable the crate (10) to be stacked, when empty, receiving means (34) are defined by the lower parts of the separating means (14.1, 14.2) and, if necessary, recesses in the wall, so that the tops of the separating means (14.1, 14.2) of one crate (10) can fit into the receiving means of a higher identical crate (10) spigot-socket fashion.

2. A crate according to claim 1, which includes a peripheral wall (24) extending upwardly from and surrounding the floor (12).

3. A crate according to claim 2, in which the crate (10) is an elongated rectangular crate and the peripheral wall (24) has two side portions and two end portions, and in which the side and end portions are suitably shaped so that an upper part of each portion forms part of the upper part of the crate (10) and a lower part of each portion forms part of the lower part of the crate (10).

4. A crate according to claim 3, in which the portions are stepped to provide a stepped formation or rebate where the upper and lower parts of the wall (24) meet and to facilitate at least partial location of the lower part of the crate (10) within the upper part thereof.

5. A crate according to any preceding claim, in which the supporting means (18) project upwardly from the floor and at least partially define the secondary sockets (22).

6. A crate according to any preceding claim, wherein the separating means comprises free-standing separating posts (14) projecting from the floor (12) in spaced relationship.

7. A crate according to claim 6, when dependent directly or indirectly on claim 2, wherein the wall (24) is provided with further spaced separating posts (14) aligned with the free-standing posts (14).

8. A crate according to claim 7, wherein the separating posts (14) or at least the lower parts thereof, are generally hollow and/or formed by suitable hollow wall formations up substantially their full heights.

9. A crate according to claim 7 wherein the separating posts (14) are of a height greater than the height of the wall (24) and the support posts (18) have a height less than the height of the wall (24).

10. A crate according to any of claims 5 to 9, wherein the separating posts (14) and support means (18) are interconnected by means of webs extending between them.

Patentansprüche

1. Flaschenkasten, der umfaßt:
Einen oberen Teil (10.1), der nach oben offen ist;
einen unteren Teil (10.2) mit einem Boden (12), wobei der untere Teil (10.2) des Kastens (10) in einem oberen Teil (10.1) eines identischen darunter befindlichen Kastens (10) aufgenommen werden kann; und Trennmittel (14.1, 14.2), die sich nach oben weg von dem Boden (12) erstrecken, um zumindest teilweise nach oben offene erste Fächer auszubilden, in denen mindestens untere Teile von Flaschen aufgenommen werden können; eine glatte von dem Boden (12) gebildete Unterfläche, welche ein sanftes Bewegen des Kastens (10) auf einem Rollförderer erlaubt; Tragemittel, die oberhalb des Bodens in einer Höhe angebracht sind, die geringer als diejenige der Trennmittel (14.1, 14.2) ist, um jedes erste Fach mit einem Sitz (20) zu versehen, auf dem ein unterer Abschnitt einer in dem ersten Fach aufgenommenen Flasche getragen werden kann; und nach unten offene zweite Fächer (22), in denen die Halsabschnitte von Flaschen in einem darunter befindlichen Kasten beim Gebrauch aufgenommen werden können; dadurch gekennzeichnet, daß die zweiten Fächer (22) jeweils Fachöffnungen mit entsprechenden Außenwandungen (23) zum Lagern auf den Halsabschnitten von Flaschen in einem identischen darunter befindlichen Kasten aufweisen; und daß, um den Kasten (10) stapelbar zu machen, wenn er leer ist, Aufnahmemittel (34) von den unteren Teilen der Trennmittel (14.1, 14.2) gebildet sind und, falls nötig, Absätze in der Wand gebildet sind, so daß die oberen Abschnitte der Trennmittel (14.1, 14.2) eines Kastens (10) in die Aufnahmemittel eines höhergelege-

nen identischen Kastens (10) in Zapfen-Muffen-Weise passen.

2. Kasten nach Anspruch 1, der eine periphere Wand (24) umfaßt, die sich nach oben von dem Boden (12), diesen umgebend erstreckt.

3. Kasten nach Anspruch 2, wobei der Kasten (10) ein länglicher, rechteckiger Kasten ist und die periphere Wand (24) zwei Seitenabschnitte und zwei Stirnabschnitte umfaßt, und wobei die Seiten- und Stirnabschnitte geeignet geformt sind, so daß ein oberer Teil eines jeden Abschnittes einen Teil des oberen Teiles des Kastens (10) und ein unterer Teil eines jeden Abschnittes einen Teil des unteren Teiles des Kastens (10) bilden.

4. Kasten nach Anspruch 3, wobei die Teile stufenförmig sind, um eine stufenförmige Gestaltung oder einen Falz auszubilden, wo die unteren und oberen Teile der Wand (24) einander treffen, und um die teilweise Anordnung des unteren Teiles des Kastens (10) innerhalb des oberen Teiles desselben zu ermöglichen.

5. Kasten nach einem der vorangehenden Ansprüche, wobei die Tragemittel (18) sich nach oben von dem Boden aus erstrecken und zumindest teilweise die zweiten Fächer (22) bilden.

6. Kasten nach einem der vorangehenden Ansprüche, wobei die Trennmittel freistehende Trennpfosten (14) umfassen, die sich beabstandet von dem Boden (12) erheben.

7. Kasten nach Anspruch 6, wenn direkt oder indirekt von Anspruch 2 abhängig, wobei die Wand (24) mit weiteren beabstandeten Trennpfosten (14) versehen ist, die mit den freistehenden Pfosten (14) ausgerichtet sind.

8. Kasten nach Anspruch 7, wobei die Trennpfosten (14) oder zumindest deren untere Teile im wesentlichen hohl und/oder von geeigneten hohlen Wandgestaltungen im wesentlichen über deren Maximalhöhe gebildet sind.

9. Kasten nach Anspruch 7, wobei die Trennpfosten (14) eine größere Höhe als die Wand (24) und die Tragesockel (18) eine geringere Höhe als die Wand (24) haben.

10. Kasten nach einem der Ansprüche 5 bis 9, wobei die Trennpfosten (14) und die Haltemittel (18) untereinander mittels sich zwischen ihnen erstreckenden Stegen verbunden sind.

Revendications

1. Casier (10) à bouteilles qui comprend: une partie supérieure (10.1) qui s'ouvre vers le haut; une partie inférieure (10.2) comprenant un fond (12), la partie inférieure (10.2) du casier (10) pouvant être reçue dans une partie supérieure (10.1) d'un casier identique sousjacent (10) ; et des moyens de séparation (14.1, 14.2) s'élevant du fond (12) pour définir au moins partiellement des alvéoles primaires s'ouvrant vers le haut dans lesquels au moins des portions inférieures de bouteilles peuvent être reçues ; une surface inférieure lisse présentée par le fond (12) permettant un mouvement en douceur du casier (10) sur un transporteur à rouleaux ; des moyens de support prévus au-dessus du fond à une hauteur inférieure à celle des moyens de séparation (14.1, 14.2) pour munir chaque alvéole primaire d'un siège (20) sur lequel une portion inférieure d'une bouteille reçue dans l'alvéole primaire peut être supportée; et des alvéoles secondaires (22) s'ouvrant vers le bas dans lesquels des portions de cols de bouteilles se trouvant dans un casier sousjacent peuvent être reçues lors de l'utilisation; caractérisé en ce que les alvéoles secondaires (22) comportent des embouchures d'alvéoles respectives avec des moyens de surfaces périphériques respectives (23) pour reposer sur les portions de cols de bouteilles dans un casier identique sousjacent; et en ce que, pour permettre au casier (10) d'être empilé, lorsqu'il est vide, des moyens de réception (34) sont définis par les parties inférieures des moyens de séparation (14.1, 14.2) et, si cela est nécessaire, par des évidements situés dans la paroi, afin que les sommets des moyens de séparation (14.1, 14.2) d'un casier (10) puissent s'ajuster dans les moyens de réception d'un casier identique supérieur (10) à la manière d'un emboîtement.

2. Casier selon la revendication 1, qui comprend une paroi périphérique (24) s'élevant du fond (12) et l'entourant.

3. Casier selon la revendication 2, dans lequel le casier (10) est un casier rectangulaire allongé et la paroi périphérique (24) comporte deux portions latérales et deux portions extrêmes, et dans lequel les portions latérales et extrêmes sont convenablement configurées de manière qu'une partie supérieure de chaque portion forme une partie de la partie supérieure du casier (10) et qu'une partie inférieure de chaque portion forme une partie de la partie inférieure du casier (10).

4. Casier selon la revendication 3, dans lequel les portions sont épaulées pour constituer une formation épaulée ou une feuillure où les parties supérieure et inférieure de la paroi (24) se rejoignent, et pour faciliter un positionnement au moins partiel de la partie inférieure du casier (10) dans sa partie supérieure.

5. Casier selon l'une quelconque des revendications précédentes, dans lequel les moyens (18) de support font saillie vers le haut du fond et définissent au moins partiellement les alvéoles secondaires (22).

6. Casier selon l'une quelconque des revendications précédentes, dans lequel les moyens de séparation comprennent des colonnes isolées et espacées (14) de séparation faisant saillie du fond (12).

7. Casier selon la revendication 6, lorsqu'elle dépend directement ou indirectement de la revendication 2, dans lequel la paroi (24) est munie d'autres colonnes espacées (14) de séparation alignées avec les colonnes isolées (14).

8. Casier selon la revendication 7, dans lequel les colonnes (14) de séparation ou au moins leurs parties inférieures sont globalement creuses et/ou formées par des formations de parois creuses convenables sensiblement sur toute leur hauteur.

9. Casier selon la revendication 7, dans lequel les colonnes (14) de séparation sont d'une hauteur plus grande que la hauteur de la paroi (24), et les colonnes (18) de support ont une hauteur inférieure à la hauteur de la paroi (24).

10. Casier selon l'une quelconque des revendications 5 à 9, dans lequel les colonnes (14) de séparation et les moyens (18) de support sont reliés entre eux au moyen de voiles s'entendant entre eux.

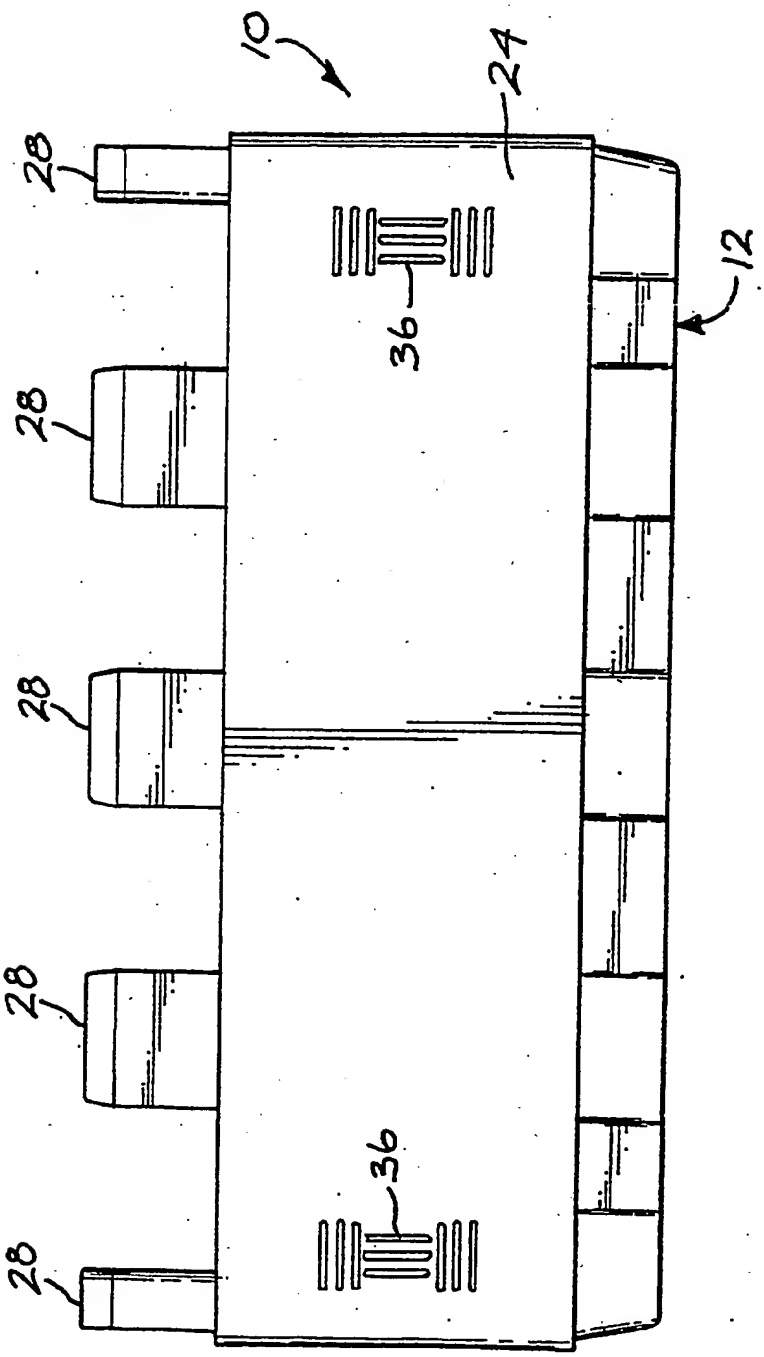

FIG 1

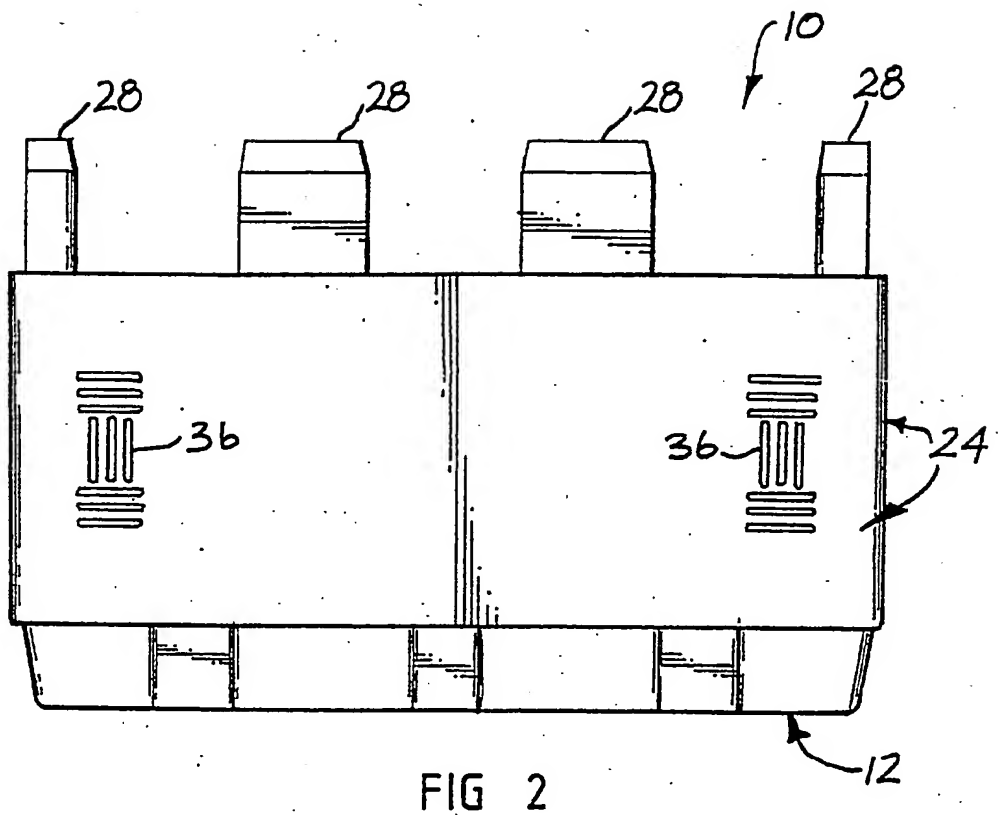
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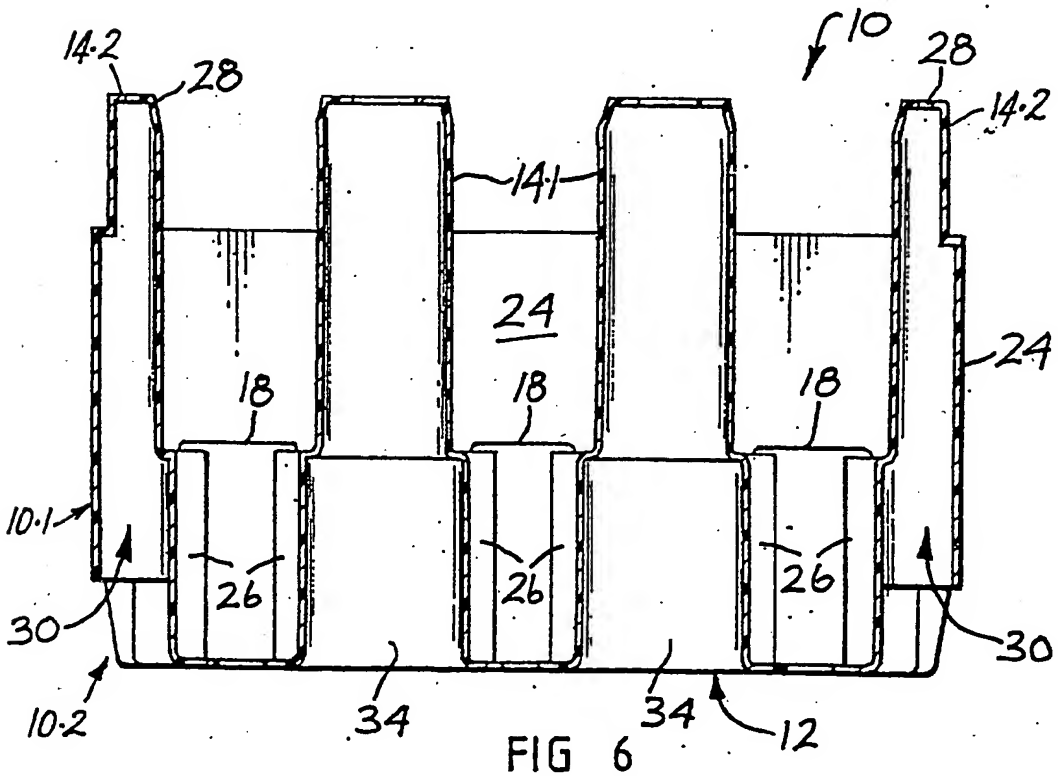
FIG 2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12

FIG 6

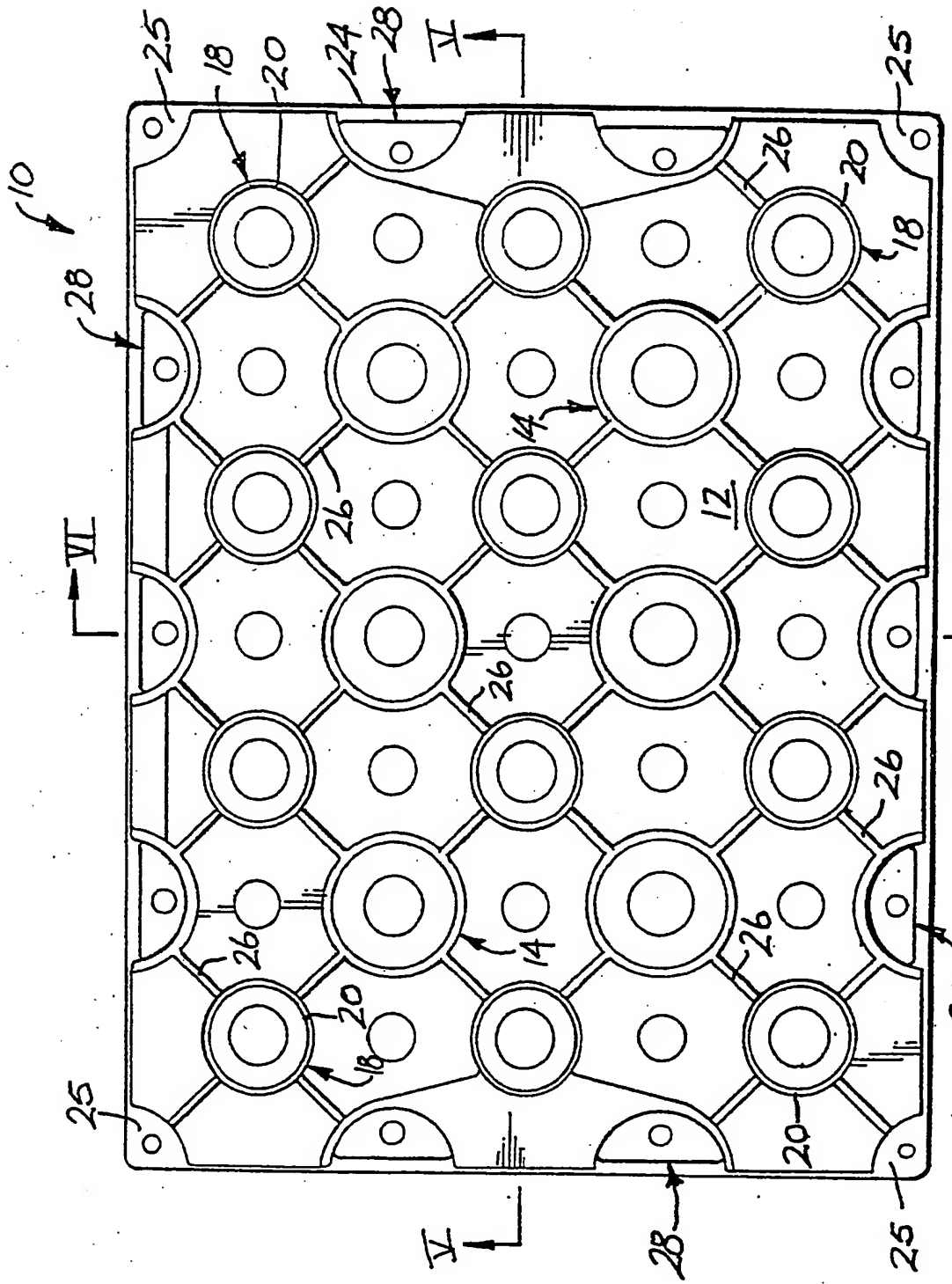

FIG 3

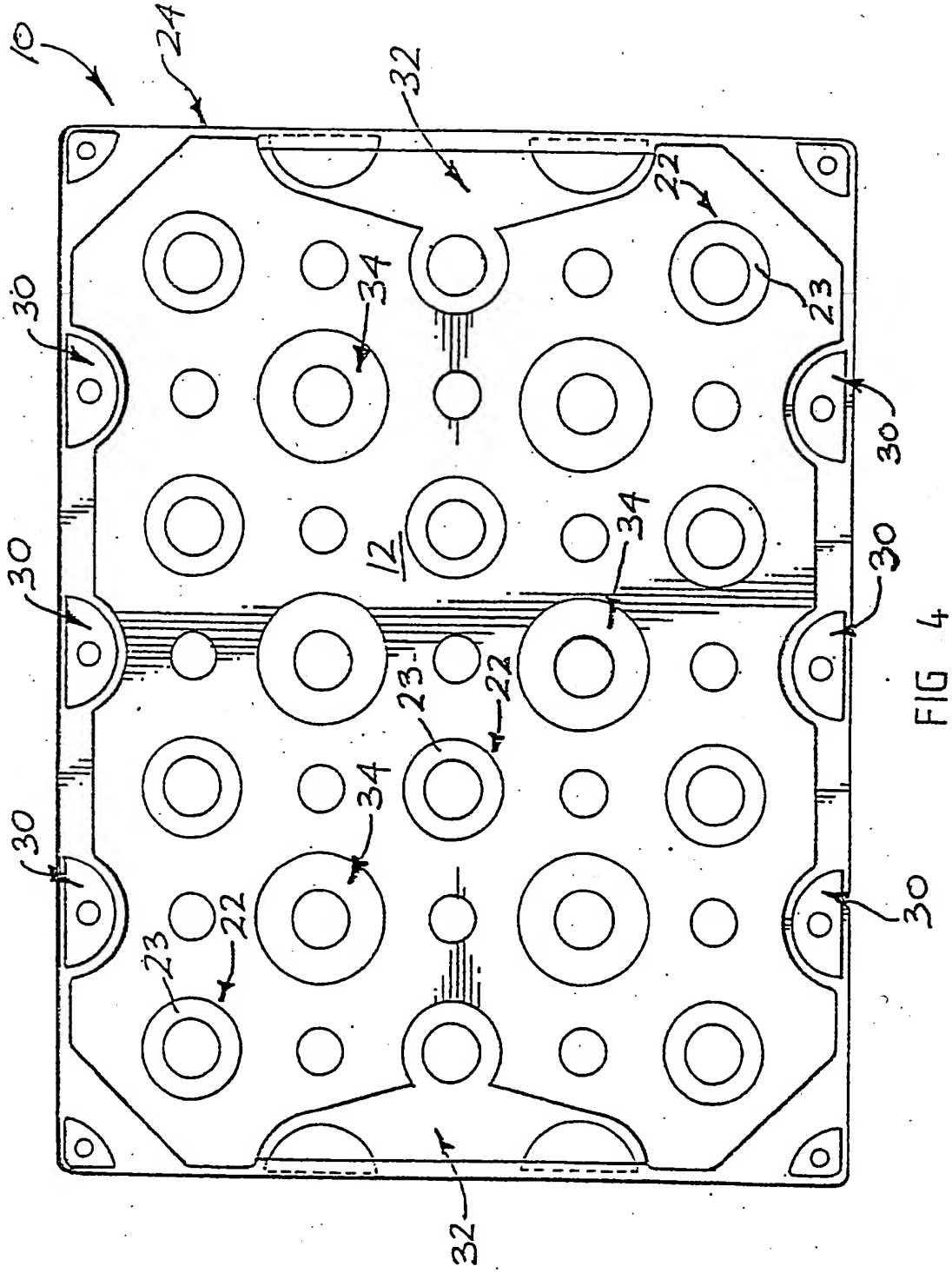

FIG 4

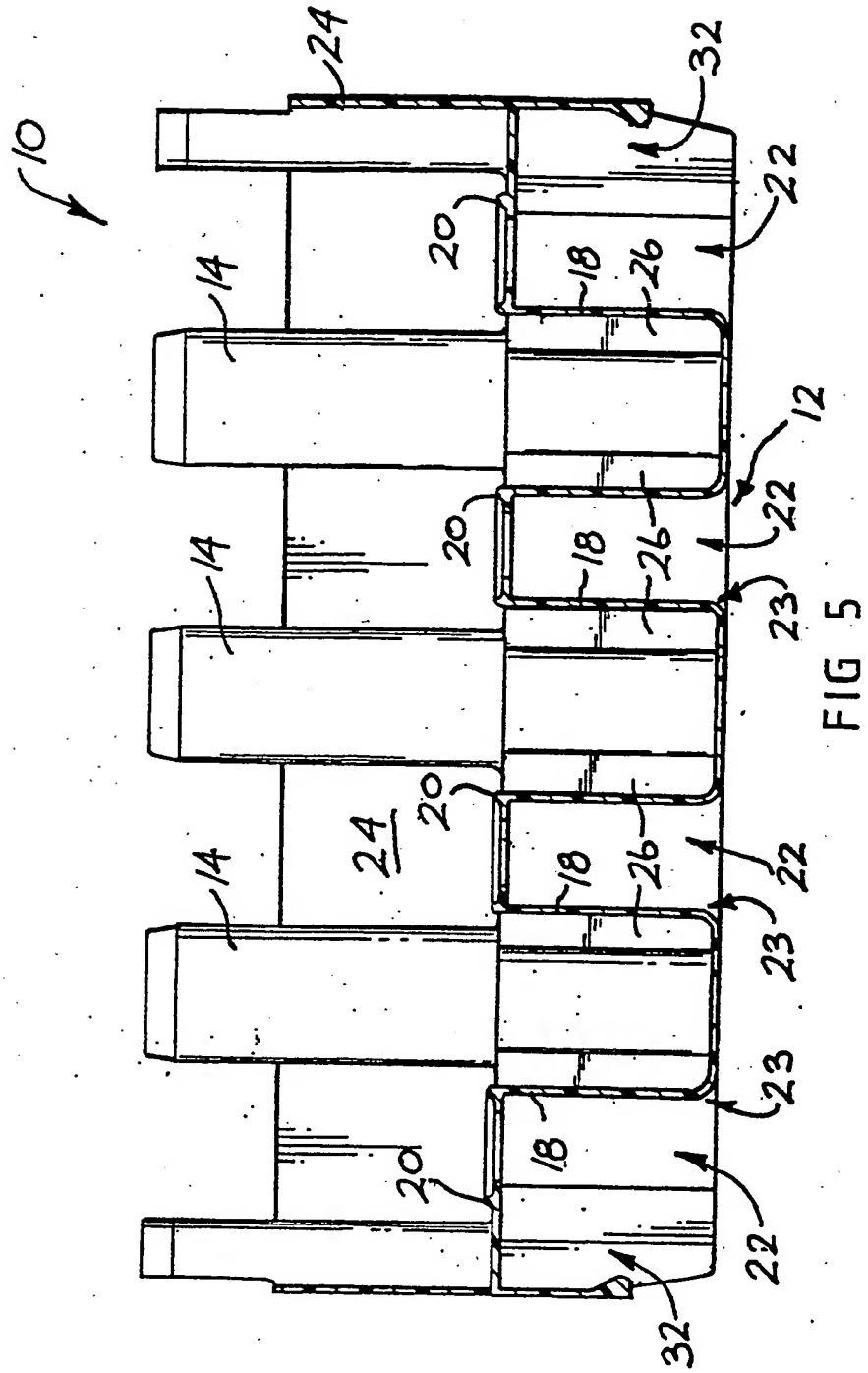

FIG 5

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